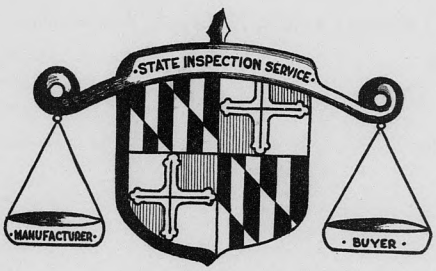
Control Series—Published Quarterly November Issue, 1926—No. 119

# Agricultural Liming Materials

This Bulletin constitutes a report of the activities of the Lime Inspection Service from November 1, 1925, to November 1, 1926. It is intended to protect the buyers of agricultural liming materials from illegitimate purchases as well as the honest manufacturer from unfair competition.




STATE LIME INSPECTION SERVICE
Controlled by
UNIVERSITY OF MARYLAND
COLLEGE PARK, MD.

Entered at College Park (Md.) Post-office as Second-Class Matter.

# AGRICULTURAL LIMING MATERIALS

**November 1, 1925—November 1, 1926.**

Compiled and edited under the supervision of N. E. Gordon, State Chemist; and L. E. Bopst, Assistant.

## BOARD OF REGENTS—UNIVERSITY OF MARYLAND

**Samuel M. Shoemaker,** Chairman ..... 1924-1933
Eccleston, Baltimore County

**Robert Crain** ..... 1924-1933
Mt. Victoria, Charles County

**John M. Dennis,** Treasurer ..... 1923-1932
Union Trust Company, Baltimore

**Dr. Frank Goodnow** ..... 1922-1931
6 W. Madison Street, Baltimore

**John E. Raine** ..... 1921-1930
413 E. Baltimore Street, Baltimore

**Charles C. Gelder** ..... 1920-1929
Princess Anne, Somerset County

**Dr. W. W. Skinner,** Secretary ..... 1919-1927
Kensington, Montgomery County

**B. John Black** ..... 1918-1926
Roslyn, Baltimore County

**Henry Holzapfel** ..... 1925-1934
Hagerstown, Washington County

**Dr. Raymond A. Pearson** ... Executive Officer and President of University

---

## STATE LIME, FEED AND FERTILIZER DEPARTMENTS

**N. E. Gordon, Ph. D.,** State Chemist.
**L. E. Bopst, B. S.,** Chemist in Charge of Lime, Feed and Fertilizer Depts.
**L. H. VanWormer, M. S.,** Assistant Chemist.
**J. E. Rice,** Assistant Chemist.
**F. Y. Brackbill,** Assistant Chemist.
**J. O. Hay,** Assistant Chemist.
**E. C. Donaldson, M. S.,** Inspector.
**H. R. Walls,** Inspector.
**Wm. J. Footen,** Inspector.

The inspection, analysis and control work of the lime, feed and fertilizer trade is carried on by the State Department, but the State Department is so related to the chemical work of the Universiy that the other men of the Chemical Staff who are mentioned below may be called on for help in time of need; and, furthermore, it is the purpose of the majority of this Chemical Staff to be carrying on some investigations which bear directly or indirectly on the properties of fertilizer, feed and lime.

---

## CHEMICAL STAFF

**N. E. Gordon, Ph. D.,** Head of Chemistry Department

**Physical Chemistry**
H. R. Haring, Ph.D., Asso. Professor
M. Leatherman, M. S., Assistant

**Organic Chemistry**
M. Kharasch, Ph. D., Professor
H. Isbell, Ph. D., Instructor

**Agricultural and Food Chemistry**
L. B. Broughton, Ph. D., Professor
H. L. Marshall, M. S., Assistant

**Industrial Chemistry**
N. L. Drake, Ph. D., Professor
G. B. Cooke, M. S., Assistant

**Analytical Chemistry**
R. C. Wiley, M. S., Asso. Prof.
D. C. Lichtenwalner, Ph.D., Instruc'r

**Inorganic Chemistry**
Charles White, Ph. D., Instructor
Mildred Grafflin, M. S., Instructor

## INTRODUCTION

In accordance with the provisions of the State Lime Law, 105 official samples of agricultural liming materials were taken by Department representatives during the past year, as compared to 85 samples during 1925. They were analyzed in order to establish the correctness of guarantees which are required to be printed upon sacks or attached cards, or attached to bins from which bulk sales are made. Separate determinations were made for calcium oxide, magnesium oxide and acid insoluble matter. In the case of carbonates of lime, determinations were also made for the degrees of fineness or size of sieve mesh, through which all of the material would pass upon screening.

The general character of the 105 samples of liming materials secured by the Department representatives during the past year is indicated below:

### Classification of Brands

| | |
|---|---|
| Hydrated Limes | 47 |
| Burnt Limes (Oxide) | 25 |
| Ground Limestone, Marl and Oyster Shells | 26 |
| Gypsum or Land Plaster | 5 |
| Miscellaneous | 2 |
| Total | 105 |

### Gratuitous Analysis

In addition to the chemical examination of the above materials, 35 additional determinations were made gratuitously on samples forwarded by residents of the State. These results are not included in our official reports, as the information obtained was usually for the personal enlightenment of the sender of the sample, and not considered of value to the public.

### The Lime Industry

In the past the lime bulletin has usually included a discussion of some scientific subject directly applicable to the lime industry. In this issue, however, there will be a digression from the usual procedure, in that an attempt will be made to relate some experiences encountered in working with the agricultural lime industry of Maryland during last year.

### The Use of Lime is Increasing

Attention is called to the increase in number of samples taken by State representatives this year. This is a clear indication that there is a greater demand for agricultural liming materials, which has led dealers to carry greater quantities of

the various liming products. It has been necessary to increase the size of the bulletin, in order to report the additional samples secured. This increase in the use of lime no doubt may be attributed in part to the educational campaigns conducted by both State and Federal agricultural organizations, and in part to the promotional work of commercial concerns interested in the manufacture and distribution of land limes.

This department has received inquiries relative to lime products in greater number during the year 1926 than during any previous year. Dealers' and manufacturers' agents are becoming more interested in this subject. They are desirous of representing only those companies whose records of inspection are beyond reproach. The supply of copies of the last two issues of our lime bulletin is entirely exhausted, and we have been unable to satisfy recent demands for these publications. Purchasers of lime, in large numbers, have written for information as to the advisability of the use of lime. They also request information as to the types of lime products that would be most beneficial if applied to their particular soil, and there seems to be a general awakening to the value of these materials, and a decided demand for additional quantities.

While it is without the province of the Lime Inspection Service to discuss the merits of liming, yet at the same time it is not thought amiss to unqualifiedly endorse the land liming movement.

Particularly gratifying is it to note that southern Maryland is awakening to the fact that most soils in that particular territory need magnesium lime. Recent scientific discoveries indicate that land intended for tobacco needs some magnesia. This is a factor which farmers in that locality should investigate very carefully.

Lime is essential in any method of farming that aims at the maintenance and improvement of soil fertility in conjunction with profitable production. Proper application of lime should be considered as important as seeding, harvesting, etc. It is obvious that the success of the liming movement will be measured by the extent to which the farmer himself gives it his support and cooperation.

## Few Deficiencies Found

The lime industry is fundamentally sound, and this Department wishes to publicly and appreciatively acknowledge the commendable spirit in which most manufacturers have cooperated in the effort to keep the market free of deficient goods. Very few deficiencies were found during the past year, and where such shortages were discovered, every possible effort was made to eliminate their causes. Lime purchasers should realize that the manufacture and sale of agricultural liming materials is a fast growing and wide spread industry. The

majority of manufacturers selling in Maryland appear to be men who would under no consideration knowingly market products that do not substantiate their guarantys. State Inspectors occasionally sampled products that were not licensed. This circumstance may generally be attributed to errors of omission on the part of those responsible for the registration of their firm's products. The majority of lime purchasers, therefore, may feel every assurance that the products they are buying are usually as represented.

Prospective lime purchasers, however, should not be confused by statements of over-zealous salesmen, concerning the relative merits or demerits of magnesium and calcium limes. For the purpose of this bulletin, and for maintaining guarantys, this Department considers the sum of the total oxides. In other words, the oxides of magnesium and calcium both neutralize soil acidity; hence, both effect the desired end. Ethics in salesmanship is a highly desirable quality. No manufacturer, or dealer, should expect to do all the business. The other man is entitled to his share; "Live and let live" is the best method, and the one that yields the largest returns.

We have read that two-thirds of the farm lands in Maryland must have an application of lime before maximum crops can be produced; therefore, the sale of agricultural limes in Maryland should steadily increase.

### The Importance of Fineness of Division of Limestone

As the name implies, this product is made by grinding the raw limestone rock. Rock may be ground at much less expense than is required to burn it. The resultant material usually has a grey or whitish color, depending on the color of the stone that is ground. While the State Lime Law requires packages to carry guarantys which show only the oxide equivalents of the product, there is another factor which influences the practical value of this particular agricultural liming material. To be most effective, limestone must be in the form of a powder, or so finely ground that it will readily be dissolved in soil water.

Referring to the chemical table on page 15 of this bulletin, it will be noted that products have been sampled that vary widely in fineness of division. Lime purchasers should always remember that in order for a particle of soil-liming material to act on a particle of soil, there must be direct contact between the two. Therefore, the finer the liming material applied, the greater the number of particles there will be to come into contact with the soil; and the more efficient the application. Scientists have spent much time and effort in arriving at some conclusions as to the solubility of this finely ground stone. The consensus of opinion seems to indicate that it is only that portion of the material which will pass thru an 80 mesh sieve that is immediately available to soils and crops, although it is

found that practically all of the material passing thru a 60 mesh sieve is theoretically available in the course of years. A very satisfactory method that has been advanced for evaluating the gradual effectiveness of ground limestone is to ascribe over a five year period full average to that which passes a 60 mesh sieve; one-half average to that which is caught in the 60 mesh sieve but passes a 20 mesh sieve, and to consider as practically inactive that material which is retained by a 20 mesh sieve. The effectiveness of ground limestone is governed almost entirely by the fineness of grinding. For this reason prospective purchasers should also be guided by the mechanical analysis, or screening test, as well as by the oxide content.

## TABLES

The following pages contain a detailed report of the results obtained in the regulation of the sale of limes in this State from November 1, 1925, to November 1, 1926. Limes are considered deficient with respect to chemical analysis when they are one per cent. or more deficient in total oxides.

Consumers and agents are advised to study carefully this table, and when making purchases are urged to give first consideration to those manufacturers whose products have been found to substantiate their guarantees.

## ANALYSES OF AGRICULTURAL BURNT LIME (OXIDES)

| No. | Name of Manufacturer or Agent | Name of Lime | Place of Sampling | Calcium Oxide CaO | | Magnesium Oxide MgO | | Sand & Insol. (no Val.) | Total Oxides CaO+MgO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Found | Guaranteed | Found | Guaranteed | Found | |
| 1796 | J. E. Baker Company, York, Pa. | Victor Burned Lime | Billmyer, Pa. | **93.74** | 85.00 | **2.29** | 3.00 | **.48** | **96.03** |
| 1785 | S. W. Barrick and Sons, Woodsboro, Md. | Agricultural Lump Lime | Woodsboro | **94.30** | 85.00 | **.50** | 5.00 | **.20** | **94.80** |
| 1783 | S. W. Barrick and Sons, Woodsboro, Md. | High Grade Agricultural Lime | Woodsboro | **63.84** | 65.00 | **6.23** | 5.00 | **7.64** | **70.07** |
| 1723 | George M. Bushey and Sons, Inc., Cavetown, Md. | Agricultural Lump Lime | Cavetown | **71.62** | 85.00 | **23.59** | 2.00 | **.94** | **95.21** |
| 1724 | George M. Bushey and Sons Inc., Cavetown, Md. | Ground Lime | Cavetown | **71.29** | 85.00 | **17.01** | 2.00 | **3.15** | **88.30** |
| *1708 | George M. Bushey and Sons Inc., Cavetown, Md. | Ground Lime | Smithsburg | **70.51** | 85.00 | **13.03** | 2.00 | **4.00** | **83.54** |
| *1745 | Fountain Rock Lime Co., Woodsboro, Md. | Old Reliable Fountain Rock Ground Lime | Woodsboro | **62.16** | 85.00 | **5.29** | 2.00 | **13.81** | **67.45** |
| *1727 | Fountain Rock Lime Co., Woodsboro, Md. | Old Reliable Fountain Rock Ground Lime | Woodsboro | **65.18** | 85.00 | **3.79** | 2.00 | **12.04** | **68.97** |
| 1726 | Fountain Rock Lime Co., Woodsboro, Md. | Old Reliable Fountain Rock Lump Lime | Woodsboro | **86.24** | 85.00 | **1.70** | 2.00 | **.85** | **87.94** |
| 1746 | Fountain Rock Lime Co., Woodsboro, Md | Old Reliable Fountain Rock Lump Lime | Woodsboro | **78.71** | 85.00 | **9.96** | 2.00 | **.40** | **88.67** |
| 1748 | M. J. Grove Lime Co., Lime Kiln, Md. | Famous Frederick Co., Lump Lime | Lime Kiln | **84.51** | 65.00 | **4.28** | 5.00 | **1.28** | **88.79** |
| 1749 | M. J. Grove Lime Co., Lime Kiln, Md. | Famous Frederick Co. Ground Lime | Lime Kiln | **59.36** | 65.00 | **10.14** | 5.00 | **12.90** | **69.50** |
| *1788 | LeGore Lime Co., LeGore, Md. | Ground Burnt Lime | LeGore | **76.38** | 80.00 | **2.17** | 3.00 | **6.20** | **78.55** |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1751 | LeGore Lime Co., LeGore, Md. | Lump Lime | LeGore | **94.81** | 80.00 | **1.23** | 3.00 | **.92** | **96.04** |
| 1731 | LeGore Lime Co., LeGore, Md. | Lump Lime | LeGore | **81.76** | 80.00 | **.95** | 3.00 | **1.05** | **82.71** |
| *1733 | LeGore Lime Co., LeGore, Md. | Ground Burnt Lime | LeGore | **75.99** | 80.00 | **1.44** | 3.00 | **14.22** | **77.43** |
| 1779 | North American Cement Corp., Hagerstown, Md. | Berkeley Ground Lime | Laurel | **90.05** | 90.00 | **2.36** | 3.00 | **.60** | **92.41** |
| *1772 | North American Cement Corp., Hagerstown, Md. | Berkeley Ground Lime | Laurel | **90.61** | 90.00 | **1.09** | 3.00 | **.50** | **91.70** |
| 1755 | Shank and Etzler Lime Co., Frederick, Md. | Agricultural Lump Lime | Frederick | **64.17** | 60.00 | **33.96** | 30.00 | **.12** | **98.13** |
| 1758 | Shank and Etzler Lime Co., Frederick, Md. | Ground Burned Lime | Frederick | **53.98** | 55.00 | **28.60** | 25.00 | **6.28** | **82.58** |
| 1759 | H. M. Spahr Lime and Stone Co., Spahr, Md | Lump Lime | Thurmont | **54.43** | 63.66 | **37.42** | 19.66 | **3.32** | **91.85** |
| 1736 | H. M. Spahr Lime and Stone Co., Spahr, Md. | Lump Lime. | Thurmont | **65.07** | 63.66 | **27.31** | 19.66 | **1.53** | **92.38** |
| *1760 | H. M. Spahr Lime and Stone Co., Spahr, Md. | Calimag Ground Lime | Thurmont | **49.92** | 60.00 | **33.96** | 30.00 | **1.16** | **83.88** |
| 1806 | Steacy and Wilton Co., Wrightsville, Pa. | Run of Kiln Lump Agricultural Lime | Bittinger, Pa. | **90.94** | 80.00 | **8.22** | ..... | **.36** | **99.16** |
| 1761 | Blair Limestone Co., Martinsburg, W. Va. | Shenandoah Ground Lime | Mt. Lake Park | **48.80** | 48.00 | **32.84** | 32.00 | **3.64** | **81.64** |

* Indicates product deficient in total oxides

## ANALYSES OF AGRICULTURAL HYDRATED LIME

| No. | Name of Manufacturer or Agent | Name of Lime | Place of Sampling | Calcium Oxide CaO | | Magnesium Oxide MgO | | Sand & Insol. (no Val.) | Total Oxides CaO+MgO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Found | Guaranteed | Found | Guaranteed | Found | |
| 1797 | J. E. Baker Co., York, Pa. | Susquehanna Hydrated Lime | Billmyer, Pa. | **61.60** | 65.00 | **8.37** | 3.00 | **1.12** | **69.97** |
| 1798 | J. E. Baker Co., York, Pa. | Victor Hydrated Lime | Billmyer, Pa. | **60.25** | 55.00 | **14.37** | 15.00 | **.76** | **74.62** |
| *1784 | S. W. Barrick and Sons, Woodsboro, Md. | Agricultural Hydrated Lime | Woodsboro | **59.58** | 65.00 | **7.52** | 5.00 | **5.88** | **67.10** |
| *1744 | S. W. Barrick and Sons, Woodsboro, Md. | Agricultural Hydrated Lime | Woodsboro | **60.79** | 65.00 | **3.04** | 5.00 | **5.88** | **63.83** |
| *1722 | S. W. Barrick and Sons, Woodsboro, Md. | Agricultural Hydrated Lime | Woodsboro | **59.69** | 65.00 | **2.44** | 5.00 | **5.40** | **62.13** |
| 1762 | Blair Limestone Co., Martinsburg, W. Va. | Special Hydrated Lime | Hancock | **66.70** | 60.00 | **.98** | 1.00 | **2.36** | **67.68** |
| 1775 | Blair Limestone Co., Marinsburg, W. Va. | Special Hydrated Lime | Bel Air | **67.87** | 60.00 | **1.23** | 1.00 | **1.84** | **69.10** |
| 1702 | Blair Limestone Co., Martinsburg, W. Va. | Special Hydrated Lime | Fallston | **64.06** | 60.00 | **1.30** | 1.00 | **4.11** | **65.36** |
| *1725 | Central Chemical Co., Hagerstown, Md. | "Gro-All" Hydrated Lime | Hancock | **65.58** | 70.00 | **4.71** | 2.00 | **3.93** | **70.29** |
| 1747 | Fountain Rock Lime Co., Woodsboro, Md. | Old Reliable Hydrated Fountain Rock Lime | Woodsboro | **60.03** | 60.00 | **2.32** | 2.00 | **.88** | **62.35** |
| 1728 | Fountain Rock Lime Co., Woodsboro, Md. | Old Reliable Hydrated Fountain Rock Lime | Woodsboro | **61.60** | 60.00 | **3.69** | 2.00 | **6.95** | **65.29** |
| *1750 | M. J. Grove Lime Co., Lime Kiln, Md. | Famous Frederick Co. Hydrated Lime | Lime Kiln | **57.12** | 65.00 | **10.49** | 5.00 | **6.80** | **67.61** |
| *1786 | M. J. Grove Lime Co., Lime Kiln, Md. | Famous Frederick Co. Hydrated Lime | Union Bridge | **58.30** | 65.00 | **8.10** | 5.00 | **8.10** | **66.40** |
| 1729 | M. J. Grove Lime Co., Lime Kiln, Md. | Famous Frederick Co. Hydrated Lime | Myersville | **65.72** | 65.00 | **4.67** | 5.00 | **3.35** | **70.39** |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1787 | O. J. Keller Lime Co., Frederick, Md. | Agricultural Hydrate | Bethesda | **68.32** | 70.00 | **4.34** | 2.00 | **2.08** | **72.66** |
| 1773 | O. J. Keller Lime Co., Frederick, Md. | Agricultural Hydrate | Laurel | **66.08** | 70.00 | **5.21** | 2.00 | **3.72** | **71.29** |
| 1730 | O. J. Keller Lime Co., Frederick, Md. | Agricultural Hydrate | Meyersville | **68.46** | 70.00 | **3.64** | 2.00 | **3.56** | **72.10** |
| 1713 | LeGore Lime Co., LeGore, Md. | Hydrated Lime | Salisbury | **61.71** | 60.00 | **1.45** | 3.00 | **9.72** | **63.16** |
| 1717 | LeGore Lime Co., LeGore, Md. | Hydrated Lime | Baltimore | **61.37** | 60.00 | **1.92** | 3.00 | **4.85** | **63.29** |
| 1732 | LeGore Lime Co., LeGore, Md. | Hydrated Lime | LeGore | **60.70** | 60.00 | **1.30** | 3.00 | **6.20** | **62.00** |
| 1752 | LeGore Lime Co., LeGore, Md. | Hydrated Lime | LeGore | **64.68** | 60.00 | **3.12** | 3.00 | **4.66** | **67.80** |
| 1776 | LeGore Lime Co., LeGore, Md. | Hydrated Lime | Conowingo | **63.84** | 60.00 | **2.79** | 3.00 | **3.30** | **66.63** |
| 1781 | LeGore Lime Co., LeGore, Md. | Hydrated Lime | Motters | **64.96** | 60.00 | **3.24** | 3.00 | **3.60** | **68.20** |
| 1743 | North American Cement Corp., Hagerstown, Md. | Berkeley Hydrated Lime | Berwyn | **70.34** | 70.00 | **1.43** | 2.00 | **.20** | **71.77** |
| 1780 | North American Cement Corp., Hagerstown, Md. | Berkeley Hydrated Lime | Laurel | **71.88** | 70.00 | **1.51** | 2.00 | **.36** | **73.39** |
| 1740 | North American Cement Corp., Hagerstown, Md. | Berkeley Hydrated Lime | Hyattsville | **70.28** | 70.00 | **1.02** | 2.00 | **.21** | **71.30** |
| 1803 | Palmer Lime and Cement Co., New York, N. Y. | Hydrated Lime | York, Pa. | **73.92** | 65.00 | **2.26** | 5.00 | **.20** | **76.18** |
| 1802 | Palmer Lime and Cement Co., New York, N. Y. | Hydrated Lime | Parkton | **68.99** | 65.00 | **4.74** | 5.00 | **.72** | **73.73** |
| 1789 | Palmer Lime and Cement Co., New York, N. Y. | Hydrated Lime | Hampstead | **70.00** | 65.00 | **4.20** | 5.00 | **.30** | **74.20** |
| 1777 | Palmer Lime and Cement Co., New York, N. Y. | Hydrated Lime | Colora | **65.25** | 65.00 | **10.00** | 5.00 | **.56** | **75.25** |
| 1734 | Palmer Lime and Cement Co., New York, N. Y. | Challenge Brand Hydrated Lime | Tanetyown | **68.32** | 65.00 | **2.28** | 5.00 | **.52** | **70.60** |
| 1756 | Shank and Etzler Lime Co., Frederick, Md. | Hydrated Lime | Frederick | **47.04** | 45.00 | **25.77** | 20.00 | **6.20** | **72.81** |

* Indicates product deficient in total oxides

## ANALYSES OF AGRICULTURAL HYDRATED LIME

| No. | Name of Manufacturer or Agent | Name of Lime | Place of Sampling | Calcium Oxide CaO | | Magnesium Oxide MgO | | Sand & Insol. (no Val.) | Total Oxides CaO+MgO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Found | Guaranteed | Found | Guaranteed | Found | |
| 1741 | Shank and Etzler Lime Co., Frederick, Md. | Hydrated Lime | Frederick | **45.87** | 45.00 | **22.87** | 20.00 | **6.19** | **68.74** |
| 1735 | H. M. Spahr Lime and Stone Co., Spahr, Md. | Hydrated Lime | Thurmont | **51.29** | 50.00 | **16.89** | 15.00 | **3.86** | **68.18** |
| 1791 | Steacy and Wilton Co., Wrightsville, Pa. | Sterling Brand Hydrated Lime | Hampstead | **68.77** | 68.00 | **3.76** | 4.00 | **1.72** | **72.53** |
| *1763 | Superior Lime Co., York, Pa. | Superior Brand Lime | Baltimore | **66.12** | 70.00 | **3.94** | 3.00 | **.44** | **70.06** |
| 1669 | Tidewater Portland Cement Co., Union Bridge, Md. | Hydrated Lime | Owings Mills | **71.79** | 71.00 | **.49** | .50 | **1.64** | **72.28** |
| 1666 | Tidewater Portland Cement Co., Union Bridge, Md. | Hydrated Lime | Crownsville | **71.90** | 71.00 | **.32** | .50 | **2.12** | **72.22** |
| 1667 | Tidewater Portland Cement Co., Union Bridge, Md. | Hydrated Lime | Crownsville | **71.68** | 71.00 | **.37** | .50 | **2.16** | **72.05** |
| 1794 | Washington Building Lime Co., Baltimore, Md. | Standard Hydarted Lime | Dickerson | **70.78** | 70.00 | **1.64** | 2.00 | **1.04** | **72.42** |
| 1770 | Washington Building Lime Co., Baltimore, Md. | Standard Hydrated Lime | Baltimore | **72.24** | 70.00 | **1.41** | 2.00 | **1.08** | **73.65** |
| 1769 | Washington Building Lime Co., Baltimore, Md. | Standard Hydrated Lime | Baltimore | **71.23** | 70.00 | **1.56** | 2.00 | **1.64** | **72.79** |
| 1698 | Washington Building Lime Co., Baltimore, Md. | Standard Hydrated Lime | Cockeysville | **70.23** | 70.00 | **1.52** | 2.00 | **1.28** | **71.75** |
| 1693 | Washington Building Lime Co., Baltimore, Md. | Standard Hydrated Lime | Sykesville | **70.67** | 70.00 | **1.40** | 2.00 | **1.55** | **72.07** |
| 1771 | York Valley Lime and Stone Co., York, Pa. | Agricultural Hydrated Lime | Baltimore | **70.56** | 65.00 | **3.47** | 5.00 | **.44** | **74.03** |
| 1664 | York Valley Lime and Stone Co., York, Pa. | Agricultural Hydrated Lime | York, Pa. | **69.44** | 65.00 | **2.43** | 5.00 | **.60** | **71.87** |
| 1778 | Chas. Warner Co., DeVault, Pa. | "Limoid" (Hydrate of Lime) | Elkton | **45.36** | 45.00 | **32.08** | 30.00 | **1.24** | **77.44** |

## ANALYSES OF AGRICULTURAL LIMESTONE, MARL AND OYSTER SHELLS

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1689 | Alba Marl Lime Co., Charles Town, W. Va. | †Alba Marl | Sykesville | **53.76** | 50.00 | **.21** | .50 | **1.45** | **53.97** |
| 1799 | J. E. Baker Co., York, Pa. | †Victor Ground Limestone | Billmyer, Pa. | **30.24** | 26.00 | **20.96** | 18.00 | **4.36** | **51.20** |
| 1710 | J. E. Baker Co., York, Pa. | †Victor Ground Limestone | Greensboro | **44.91** | 26.00 | **.51** | 18.00 | **10.90** | **45.42** |
| *1690 | Baugh and Sons Co., Baltimore, Md. | †Oyster Shell Lime | Baltimore | **42.51** | 47.00 | **.29** | .50 | **16.36** | **42.80** |
| 1672 | Baugh and Sons Co., Baltimore, Md. | †Oyster Shell Lime | Baltimore | **50.40** | 47.00 | **.21** | .50 | **5.38** | **50.61** |
| 1800 | Beaver Dam Marble Co., Cockeysville, Md. | †Dolomitic Limestone | Cockeysville | **30.46** | 30.00 | **20.82** | 21.00 | **4.76** | **51.28** |
| 1697 | Beaver Dam Marble Co., Cockeysville, Md. | †Dolomitic Limestone | Cockeysville | **33.04** | 30.00 | **18.91** | 21.00 | **7.24** | **51.95** |
| 1711 | Herbert Bryant's Son, Alexandria, Va. | †Pulverized Oyster Shell Lime | Crisfield | **46.25** | 45.00 | **.31** | ..... | **3.60** | **46.56** |
| 1673 | Central Chemical Co., Hagerstown, Md. | †Oyster Shell Lime | Baltimore | **43.45** | 39.20 | **.21** | .50 | **7.95** | **43.66** |
| 1691 | Dorchester Shell and Lime Co, Cambridge, Md. | †Roasted Pulverized Oyster Shell Lime | Baltimore | **43.34** | 40.00 | **.30** | .60 | **15.38** | **43.64** |
| 1712 | Dorchester Shell and Lime Co., Cambridge, Md. | †Roasted Pulverized Oyster Shell Lime | Cambridge | **42.11** | 40.00 | **.15** | .60 | **17.97** | **42.26** |
| 1767 | M. J. Grove Lime Co., Lime Kiln, Md. | †Pulverized Limestone | Beltsville | **53.81** | 50.00 | **.53** | ..... | **1.72** | **54.34** |
| 1766 | M. J. Grove Lime Co., Lime Kiln, Md. | †Pulverized Limestone | Beltsville | **52.75** | 50.00 | **.54** | ..... | **1.32** | **53.29** |
| *1665 | Hagerstown Lime and Chemical Co., Hagerstown, Md. | †Lime Marl | Hagerstown | **46.60** | 50.00 | **.25** | .50 | **4.30** | **46.85** |
| 1754 | LeGore Lime Co., LeGore, Md. | †Pulverized Limestone | LeGore | **50.40** | 40.00 | **1.31** | 2.00 | **10.52** | **51.71** |
| 1714 | Natural Lime Marl Co., Roanoke, Va. | †Lime Marl | Greensboro | **50.02** | 50.00 | **.29** | .50 | **3.63** | **50.31** |

* Indicates product deficient in total oxides

† Ground shell or stone, Mechanical Analysis on page 15.

## ANALYSES OF AGRICULTURAL LIMESTONE, MARL AND OYSTER SHELLS

| No. | Name of Manufacturer or Agent | Name of Lime | Place of Sampling | Calcium Oxide CaO | | Magnesium Oxide MgO | | Sand & Insol. (no Val.) | Total Oxides CaO+MgO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Found | Guaranteed | Found | Guaranteed | Found | |
| 1804 | Palmer Lime and Cement Co., New York, N. Y. | *Challenge Brand Pulverized Limestone Flour | York, Pa. | **50.40** | 48.00 | **4.29** | 6.00 | **1.52** | **54.69** |
| *1807 | Patuxent Guano Co., Balto., Md. | †Crushed Oyster Shell Lime | Baltimore | **43.52** | 46.00 | **.47** | .50 | **14.88** | **43.99** |
| 1707 | Potomac Poultry Food Co., Inc., Balto., Md. | †Oyster Shell Lime | Baltimore | **47.26** | 46.00 | **.43** | .50 | **8.80** | **47.69** |
| 1692 | Potomac Poultry Food Co., Inc., Balto., Md. | †Oyster Shell Lime | Baltimore | **47.26** | 46.00 | **.28** | .50 | **9.38** | **47.54** |
| 1790 | Standard Lime & Stone Co., Balto., Md. | †Pulverized Limestone | Keymar | **53.70** | 50.43 | **.57** | .50 | **2.24** | **54.27** |
| 1774 | Standard Lime & Stone Co., Baltr., Md. | †Pulverized Limestone | Laurel | **54.10** | 50.43 | **.78** | .50 | **1.48** | **54.88** |
| 1792 | Steacy & Wilton Co., Wrightsville, Pa. | †Pulverized Limestone | Taneytown | **52.64** | 50.00 | **2.29** | ..... | **2.24** | **54.93** |
| *1656 | Valley Lime Marl Co., Balto., Md. | †Lime Marl | Baltimore | **48.16** | 50.00 | **.22** | .50 | **3.80** | **48.38** |
| 1657 | Valley Lime Marl Co., Balto., Md. | †Lime Marl | Baltimore | **53.05** | 50.00 | **.16** | .50 | **1.98** | **53.21** |
| 1715 | W. H. Valliant & Bro., Bellevue, Md. | Baked & Gd. Oyster Shell Lime | Bellevue | **45.36** | 45.00 | **.68** | ..... | **13.87** | **46.04** |

* Indicates product deficient in total oxides.
† Ground shell or stone, Mechanical Analysis on page 15.

## ANALYSES OF GYPSUM OR LAND PLASTER

| No. | Name of of Manufacturer or Agent | Name of Lime | Place of Sampling | Calcium Sulphate | | Sand & Insol. (no value.) |
|---|---|---|---|---|---|---|
| | | | | FOUND | Guaranteed | FOUND |
| 1706 | American Agricultural Chemical Co., New York, N. Y. | Ground Land Plaster | Baltimore. | **75.20** | 74.00 | **1.57** |
| *1716 | Baugh & Sons Co., Baltimore, Md. | Pure Ground Land Plaster | Baltimore | **60.28** | 77.70 | **4.06** |
| 1675 | G. Ober & Sons Co., Baltimore, Md. | Nova Scotia Land Plaster | Baltimore | **82.78** | 77.70 | **6.10** |
| 1676 | Southern Gypsum Co., Inc., North Holston, Va. | Southern Agri. Gypsum | Baltimore | **80.22** | 67.98 | **8.67** |
| 1793 | United States Gypsum Co., Chicago, Ill. | Ben Franklin Agri. Gypsum | Taneytown | **77.70** | 68.00 | **1.68** |

* Indicates product deficient in calcium sulphate.

## ANALYSES OF MISCELLANEOUS PRODUCTS

| No. | Name of Manufacturer or Agent | Name of Lime | Place of Sampling | Calcium Oxide CaO | | Magnesium Oxide MgO | | Sand & Insol. (no value) | Total Oxides CaO+MgO |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Found | Guar. | Found | Guar. | Found | |
| 1757 | M. J. Grove Lime Co., Lime Kiln, Md. | Carbo Oxide | Friendsville | **67.78** | 35.00 | **.45** | .50 | **1.16** | **68.23** |
| 1768 | N. Amer. Cement Corp., Hagerstown, Md. | Berkley Hydra-Calcite Lime | Baltimore | **66.09** | 65.00 | **2.53** | 2.00 | **1.04** | **68.62** |

## TABLE II—SHOWING MECHANICAL ANALYSES OF GROUND LIMESTONE AND GROUND OYSTER SHELLS

For the Chemical Analyses of these samples, see preceding table. Figures are percentages or pounds per hundred. "Mesh" indicates the sieve used; "20 Mesh" has 20 wires to the inch.

| No. | Name of Manufacturer or Agent | Name of Lime or Kind | Finer than 100 Mesh | Between 80 & 100 Mesh | Between 60 & 80 Mesh | Between 40 & 60 Mesh | Between 20 & 40 Mesh | Coarser than 20 Mesh |
|---|---|---|---|---|---|---|---|---|
| 1689 | Alba Marl Lime Co., Charles Town, W. Va. | Alba Marl | 85 | 1 | 1 | 4 | 7 | 2 |
| 1799 | J. E. Baker Co., York, Pa. | Victor Ground Limestone | 99 | 1 | 0 | 0 | 0 | 0 |
| 1710 | J. E. Baker Co., York, Pa. | Victor Ground Limestone | 100 | 0 | 0 | 0 | 0 | 0 |
| 1690 | Baugh & Sons Co., Balto., Md. | Oyster Shell Lime | 37 | 10 | 4 | 15 | 32 | 2 |
| 1672 | Baugh & Sons Co., Balto., Md. | Oyster Shell Lime | 36 | 12 | 3 | 16 | 32 | 1 |
| 1800 | Beaver Dam Marble Co., Cockeysville, Md. | Dolomitic Limestone | 44 | 8 | 2 | 10 | 23 | 13 |
| 1697 | Beaver Dam Marble Co., Cockeysville, Md. | Dolomitic Limestone | 47 | 6 | 3 | 14 | 29 | 1 |
| 1711 | Herbert Bryant's Son, Alexandria, Va. | Pulv. Oyster Shell Lime | 37 | 12 | 3 | 14 | 30 | 4 |
| 1673 | Central Chemical Co., Hagerstown, Md. | Oyster Shell Lime | 39 | 14 | 4 | 14 | 26 | 3 |
| 1691 | Dorchester Shell & Lime Co., Cambridge, Md. | Roasted Pulv. Oys. Shell Lime | 37 | 10 | 4 | 13 | 32 | 4 |
| 1712 | Dorchester Shell & Lime Co., Cambridge, Md. | Roasted Pulv. Oys. Shell Lime | 43 | 10 | 5 | 13 | 28 | 1 |
| 1767 | M. J. Grove Lime Co., Lime Kiln, Md. | Pulverized Limestone | 38 | 10 | 1 | 17 | 32 | 2 |
| 1766 | M. J. Grove Lime Co., Lime Kiln, Md. | Pulverized Limestone | 18 | 8 | 3 | 16 | 47 | 8 |
| 1665 | Hagerstown Lime & Chem. Co., Hagerst'n, Md. | Lime Marl | 61 | 1 | 0 | 7 | 21 | 10 |
| 1754 | LeGore Lime Co., LeGore, Md. | Pulverized Limestone | 99 | 1 | 0 | 0 | 0 | 0 |
| 1714 | Natural Lime Marl Co., Roanoke, Va. | Lime Marl | 76 | 2 | 0 | 2 | 14 | 6 |
| 1804 | Palmer Lime & Cement Co., New York, N. Y. | Chal. Bd. Pulv. Limestone Flour | 100 | 0 | 0 | 0 | 0 | 0 |
| 1807 | Patuxent Guano Co., Balto., Md. | Crushed Oyster Shell Lime | 39 | 7 | 4 | 14 | 33 | 3 |
| 1707 | Potomac Poult. Food Co., Inc., Balto., Md. | Oyster Shell Lime | 38 | 12 | 4 | 14 | 30 | 2 |
| 1692 | Potomac Poult. Food Co., Inc., Balto., Md. | Oyster Shell Lime | 36 | 10 | 4 | 16 | 32 | 2 |
| 1790 | Standard Lime & Stone Co., Balto., Md. | Pulverized Limestone | 56 | 12 | 4 | 15 | 13 | 0 |
| 1774 | Standard Lime & Stone Co., Balto., Md. | Pulverized Limestone | 56 | 12 | 4 | 14 | 14 | 0 |
| 1792 | Steacy & Wilton Co., Wrightsville, Pa. | Pulverized Limestone | 71 | 5 | 1 | 6 | 16 | 1 |
| 1656 | Valley Lime Marl Co., Balto., Md. | Lime Marl | 78 | 2 | 1 | 2 | 6 | 11 |
| 1657 | Valley Lime Marl Co., Balto., Md. | Lime Marl | 39 | 2 | 2 | 6 | 28 | 23 |

The following firms had products registered as outlined, samples of which were not secured by our inspectors in the regular discharge of their duties:

American Lime & Stone Co., Bellefonte, Pa.
Bald Eagle Hydrated Lime ---------- CaO 69% MgO 1%

Blair Limestone Co., Martinsburg, W. Va.
Opequon Hydrated Lime ---------- CaO 65% MgO 1½%

John S. Hyde, Westminster, Md.
Agricultural Lump Lime ---------- CaO 85% MgO 5%

Merion Lime & Stone Co., Norristown, Pa.
Run of Kiln Lime. ---------- CaO 50% MgO 30%
Merion Hydrated Lime ---------- CaO 44% MgO 30%

North American Cement Corp., Hagerstown, Md.
Berkeley Pulverized Limestone ---------- CaO 44%

Roy C. Saylor, Union Bridge, Md.
Lump Lime ---------- CaO 85%

Tidewater Portland Cement, Union Bridge, Md.
Tidewater Lump Lime ---------- CaO 92% MgO 1%

F. W. Tunnell & Co., Inc., Philadelphia, Pa.
"Limonia" ---------- CaO 28% MgO 7%

Van Sciver Corporation, Philadelphia, Pa.
Knickerbocker Hydrated Lime ---------- CaO 45% MgO 30%

Charles Warner Co., Devault, Pa.
Pulverized Burned Lime ---------- CaO 54% MgO 36%
Pulverized Limestone ---------- CaO 29% MgO 19%
Warner's "Limoid" Innoculated Hydrate of Lime ---------- CaO 45% MgO 30%
Run-of-Kiln Lime ---------- CaO 56% MgO 37%

Washington Building Lime Co., Baltimore, Md.
Ground Lime ---------- CaO 90% MgO 2%
Standard Two-In-One ---------- CaO 35% MgO 1%
Standard Lime ---------- CaO 90% MgO 2%

Henry Mosser, Oakland, Md.
Ground Limestone ---------- CaO 40%

Palmer Lime & Cement Co., New York, N. Y.
Agricultural Lump Lime ---------- CaO 88% MgO 6%